

1 Tailings microbial community profile and prediction of its  
2 functionality in basins of tungsten mine

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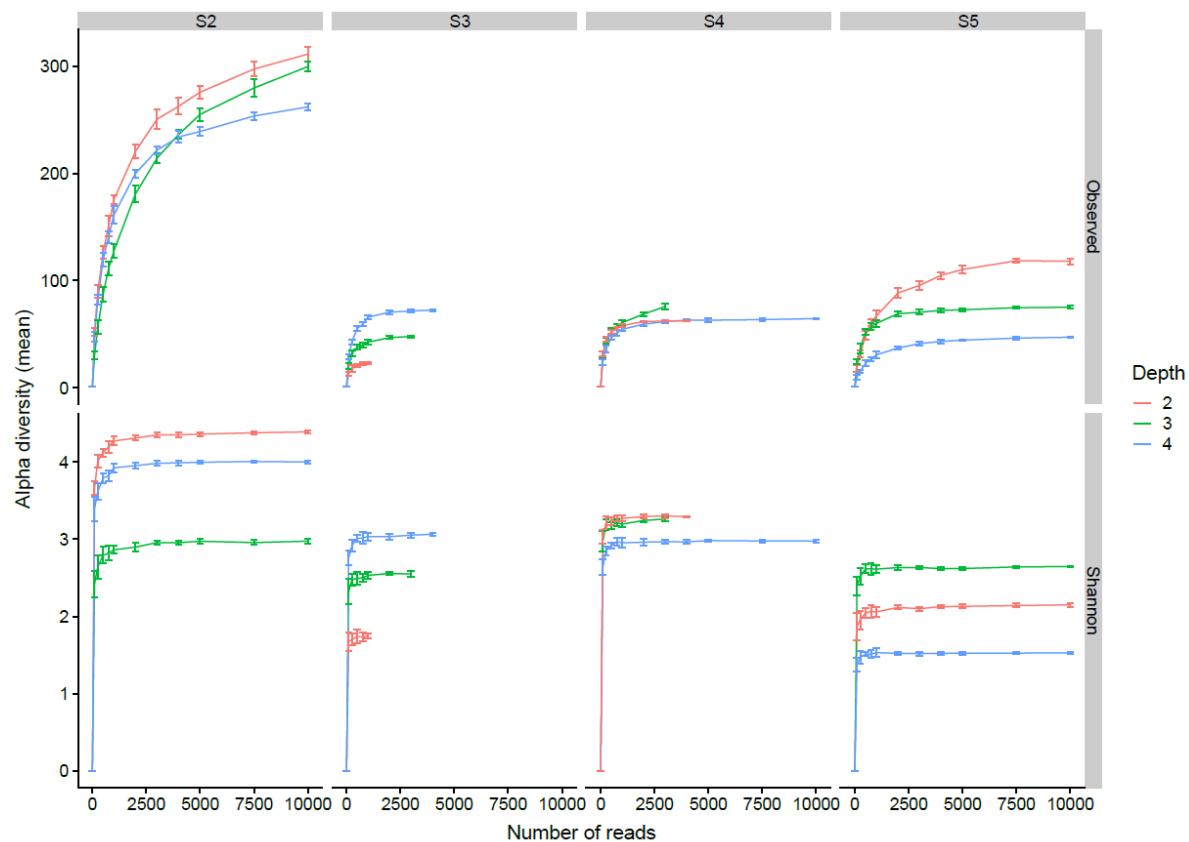
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26 **Supplementary Materials**

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31 **Supplementary Figure S1.** Rarefaction curves separated by borehole and colored by  
32 depth. Top row is observed richness while the lower is Shannon diversity index. Error  
33 bars indicate SD of 10 separate rarefactions for each number of reads within the  
34 individual samples.

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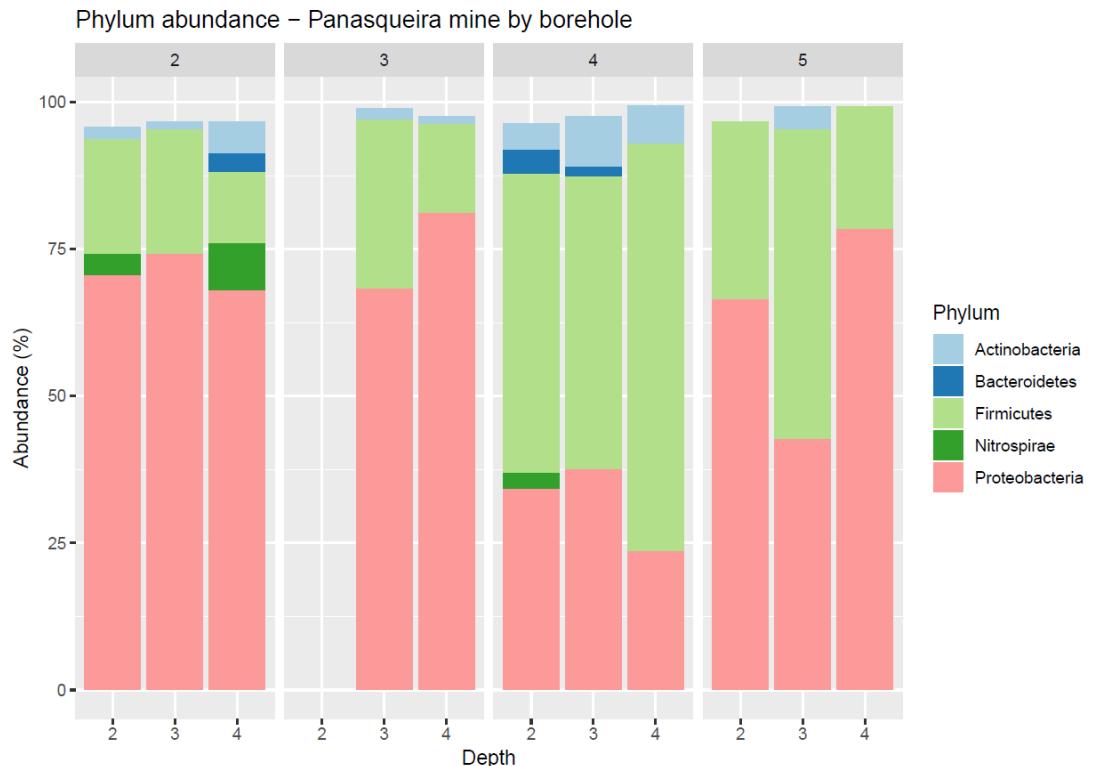
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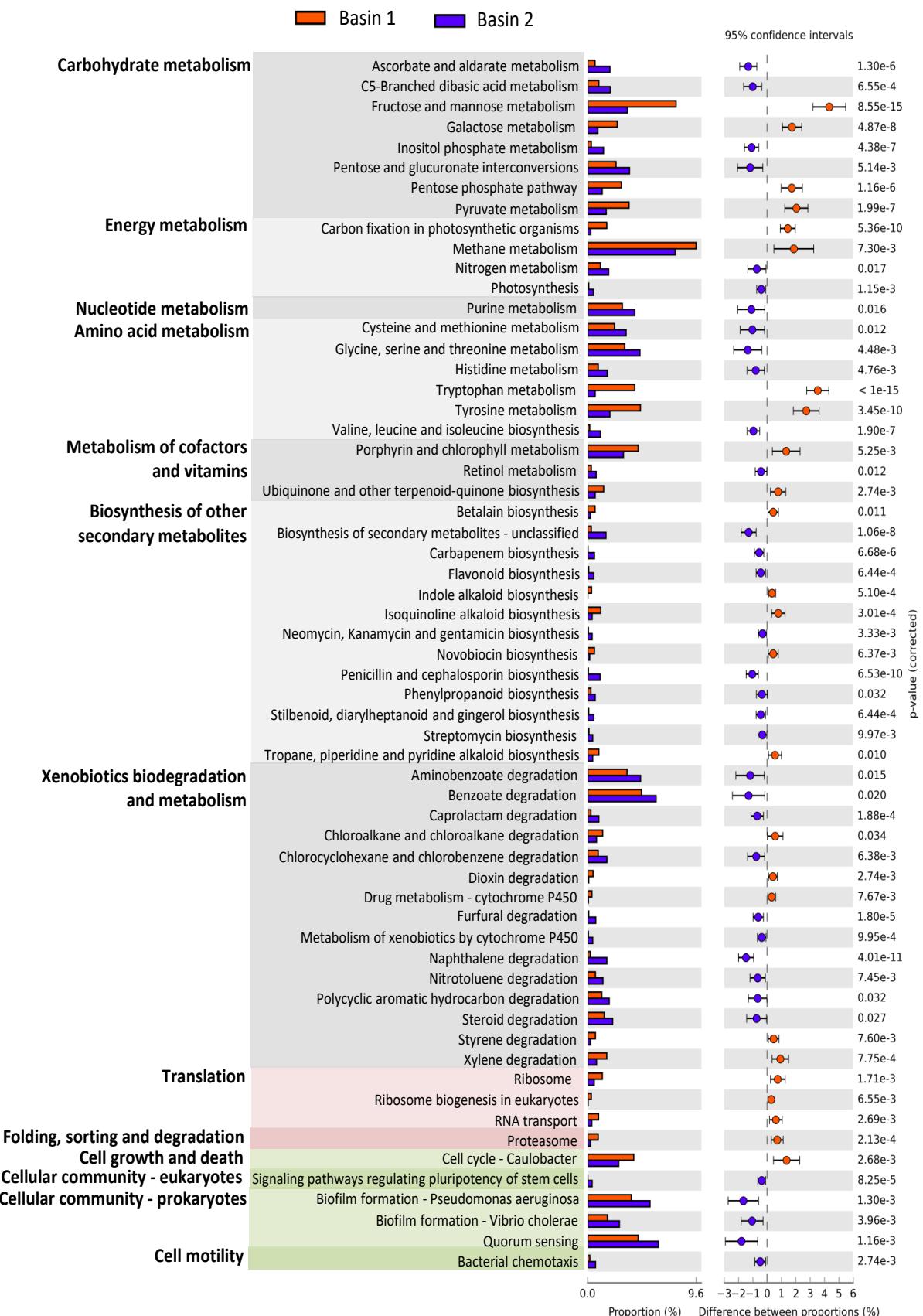
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44 **Supplementary Figure S2.** Barplot of the phylum abundance within each sample.  
 45 Samples are sorted by borehole (grey box) and x axis indicate sampling depth. In each  
 46 sample, phyla representing less than 1% have not been plotted.

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51 **Supplementary Figure S3.** Relative abundances of predicted functions (KEGG level 2 and 3) of the microbial communities in the two basins of Panasqueira mine using PICRUSt. Only predicted function that are significantly different in abundance between the two basins are represented ( $P < 0.05$ ).

55 **Supplementary Table 1.** Paired *t*-test of physicochemical parameters measured in sediments  
 56 collected in the tailing basins. D90, Maximum diameter for 90% of the particles; BOD,  
 57 Biological Oxygen Demand; TOC, Total Organic Carbon in sediments; NAG, Net Acid  
 58 Generation

Chemical Elements	Basin 1 - Borehole S5			Basin 2 - Borehole S2			Paired <i>t</i> -test  <i>p</i> value
	Mean abundance (ppm)	SD	N	Mean abundance (ppm)	SD	N	
F	8020.00	600.25	3	7793.33	359.49	3	0.664
Na	6154.97	100.72	3	4928.42	192.65	3	<b>0.002</b>
Al	105135.50	4810.45	3	83730.88	1655.50	3	<b>0.007</b>
Si	273963.50	6558.02	3	269066.30	7430.33	3	0.225
P	1371.81	85.11	3	1607.48	163.83	3	0.153
S	6757.10	587.82	3	18140.84	1760.44	3	<b>0.014</b>
K	41394.05	3761.65	3	30737.69	960.12	3	<b>0.023</b>
Ca	3490.12	125.09	3	4979.08	592.82	3	<b>0.035</b>
Ti	8373.33	295.69	3	6790.00	137.48	3	<b>0.004</b>
Fe	54947.22	963.57	3	69472.05	3700.47	3	<b>0.012</b>
Sc	15.03	0.76	3	11.90	0.72	3	<b>0.007</b>
V	153.30	10.83	3	103.97	3.79	3	<b>0.022</b>
Cr	112.93	3.99	3	89.87	2.99	3	<b>0.023</b>
Mn	834.20	116.53	3	830.60	81.89	3	0.932
Co	17.87	0.76	3	21.87	1.37	3	<b>0.030</b>
Ni	61.77	2.32	3	66.53	5.77	3	0.411
Cu	1960.63	479.90	3	2892.13	597.96	3	0.261
Zn	4431.47	613.13	3	8607.60	2569.35	3	0.151
Ga	29.27	0.67	3	22.20	0.92	3	<b>0.008</b>
Ge	14.57	0.76	3	7.90	1.32	3	<b>0.030</b>
As	3079.13	631.50	3	22397.63	2056.92	3	<b>0.006</b>
Rb	578.40	41.77	3	396.17	4.38	3	<b>0.019</b>
Sr	75.30	5.70	3	73.13	4.63	3	0.751
Y	27.27	3.10	3	19.50	0.61	3	<b>0.038</b>
Zr	197.10	4.04	3	175.97	9.34	3	0.055
Nb	13.83	0.90	3	10.17	1.07	3	<b>0.019</b>
Mo	2.77	0.25	3	3.97	2.39	3	0.509
Ag	15.11	2.08	3	16.73	4.09	3	0.689
Cd	50.77	12.31	3	103.40	34.53	3	0.175
Sn	310.17	38.63	3	408.47	111.06	3	0.370
Sb	3.30	1.31	3	9.43	1.56	3	<b>0.018</b>
Cs	83.97	7.30	3	37.73	5.78	3	<b>0.012</b>
Ba	523.73	46.81	3	361.93	11.25	3	<b>0.028</b>
La	30.97	1.70	3	21.03	1.38	3	<b>0.010</b>
Ce	110.87	9.88	3	307.63	6.81	3	<b>0.001</b>
W	1461.10	97.04	3	1155.77	196.80	3	0.194
Pb	108.50	20.86	3	114.00	21.02	3	0.841
<b>Other variables</b>							
D90 (µm)	110.93	97.91	3	745.87	188.56	3	<b>0.013</b>
BOD (g/L)	0.24	0.26	3	1.04	1.65	3	0.530
TOC (%)	0.67	0.03	3	0.92	0.12	3	<b>0.047</b>
pH	5.98	0.07	3	6.82	0.25	3	<b>0.044</b>
NAG (kg H <sub>2</sub> SO <sub>4</sub> /t ore)	7.84	0.20	3	17.12	0.30	3	<b>0.001</b>

59 **Supplementary Table 2.** Similarity Percentage analysis (SIMPER) of the contribution (~75%  
60 of total) of the different chemical elements to the average dissimilarity between the two  
61 tailing basins in terms of physicochemical characteristics  
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Chemical elements	Average Dissimilarity	Contribution (%)	Cumulative (%)	Mean Abundance (%)	
				Basin 1	Basin 2
Al	2.02	22.08	22.08	20.04	15.61
As	1.82	19.92	42.00	0.59	4.18
Fe	1.37	14.97	56.97	10.48	12.96
S	1.07	11.74	68.70	1.29	3.38
K	1.01	10.99	79.69	7.90	5.73

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